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In re Application of

BRYANT

Application Number

08/841488

Filed

Apr. 23, 1997

Paper No. #7

I hereby request access under 37 CFR 1.14(a)(1)(iv) to the application file record of the above-identified ABANDONED application, which is identified in, or to which a benefit is claimed, in the following document (as shown in the attachment):

United States Patent Application Publication No. _____, page, _____ line _____,

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(12) **United States Patent**
Bryant

(10) **Patent No.:** **US 6,279,550 B1**
(45) **Date of Patent:** **Aug. 28, 2001**

(54) **INTERNAL COMBUSTION ENGINE**

(76) **Inventor:** **Clyde C. Bryant**, 410 Trammel Dr.,
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(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **08/863,103**

(22) **Filed:** **May 23, 1997**

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1997, provisional application No. 60/029,260, filed on Oct.
25, 1996, provisional application No. 60/022,460, filed on
Aug. 6, 1996, and provisional application No. 60/022,102,
filed on Jul. 17, 1996.

(51) - **Int. Cl.⁷** **F02B 33/00**

(52) **U.S. Cl.** **123/559.1; 60/609; 123/562;**
123/316; 123/432

(58) **Field of Search** **60/605.1, 609,**
60/612; 123/316, 432, 559.1, 562

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(57) **ABSTRACT**

The invention is concerned with a method of deriving mechanical work from a combustion gas in internal combustion engines and reciprocating internal combustion engines for carrying out the method. The invention includes methods and apparatuses for managing combustion charge densities, temperatures, pressures and turbulence in order to produce a true mastery within the power cylinder in order to increase fuel economy, power, and torque while minimizing polluting emissions. In its preferred embodiments, the method includes the steps of (i) producing an air charge, (ii) controlling the temperature, density and pressure of the air charge, (iii) transferring the air charge to a power cylinder of the engine such that an air charge having a weight and density selected from a range of weight and density levels ranging from below atmospheric weight and density to heavier-than-atmospheric weight and density is introduced into the power cylinder, and (iv) then compressing the air charge at a lower-than-normal compression ratio, (v) causing a pre-determined quantity of charge-air and fuel to produce a combustible mixture, (vi) causing the mixture to be ignited within the power cylinder, and (vii) allowing the combustion gas to expand against a piston operable in the power cylinders with the expansion ratio of the power cylinders being substantially greater than the compression ratio of the power cylinders of the engine. In addition to other advantages, the invented method is capable of producing mean effective cylinder pressures ranging from lower-than-normal to higher-than-normal. In the preferred embodiments, the mean effective cylinder pressure is selectively variable (and selectively varied) throughout the mentioned range during the operation of the engine. In an alternate embodiment related to constant speed-constant load operation, the mean effective cylinder pressure is selected from the range and the engine is configured, in accordance with the present invention, such that the mean effective cylinder pressure range is limited, being varied only in the amount required for producing the power, torque and speed of the duty cycle for which the engine is designed.

26 Claims, 34 Drawing Sheets

